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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/541,745

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Hiroshi Yamamoto

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EXAMINER

WILSON, MICHAEL H

ART UNIT

PAPER NUMBER

1794

MAIL DATE

DELIVERY MODE

09/28/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/541,745	Applicant(s) YAMAMOTO ET AL.	
	Examiner MICHAEL WILSON	Art Unit 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 July 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,6,7,9-11 and 13-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-3,6 and 14-21 is/are allowed.
- 6) ☒ Claim(s) 9-11 and 13 is/are rejected.
- 7) ☒ Claim(s) 7 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 17 July 2009 has been entered.

Response to Amendment

2. This Office action is in response to Applicant's amendment filed 17 July 2009, which amends claims 1, 3, 9, and 21.

Claims 1-3, 6, 7, 9-11, and 13-21 are pending.

3. The rejection under 35 U.S.C. 102(e) of claims 1, 3, 14-18, and 21 as being anticipated by Kim et al. (US 6,998,487 B2), is overcome due to Applicant's amending of the claims in the reply filed 17 July 2009.

4. The rejection(s) under 35 U.S.C. 103(a) of claims 2 and 6 as being unpatentable over Kim et al. (US 6,998,487 B2) and claims 19-20 as being unpatentable over Kim et al. (US 6,998,487 B2) in view of Kido et al. (US 6,013,384) are overcome due to applicant's amending of the claims in the reply filed 17 July 2009.

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5. The objections to claims 3 and 21 under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim are withdrawn due to applicants amending of the claims in the reply filed 17 July 2009.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

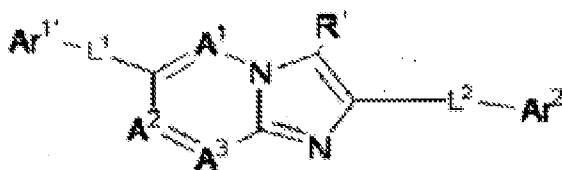
7. Claims 9 and 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 9, a broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 9

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recites the broad recitation "a substituted or unsubstituted arylene group having 6 to 60 nuclear carbon atoms", and the claim also recites "a substituted or unsubstituted fluorenylene group" which is the narrower statement of the range/limitation. A suggested correction is to delete "a substituted or unsubstituted fluorenylene group" in line 15 of the claim because a substituted or unsubstituted fluorenylene group is encompassed by a substituted or unsubstituted arylene group having 6 to 60 nuclear carbon atoms.

Claim 10 recites the limitation "general formula (2') in line 3. There is insufficient antecedent basis for this limitation in the claim. This appears to be the result of the accidental deletion of general formula (2') for the claim. General formula (2') found in the previous set of claims is:



General formula (2') will be interpreted to mean this formula.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. Claims 9-11, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakatsuka et al. (JP 2001/035664 A), machine translation relied upon.

Regarding claims 9-11 and 13, Nakatsuka et al. disclose heterocyclic compounds containing the imidazopyridine structure shown below [0007]. The reference uses the compounds in an organic electroluminescent device. Nakatsuka et al. define the substituents on the molecule where X₄ includes substituted or unsubstituted aryl substituents [0007]. The reference explicitly mentions 1- and 2-naphthyl substituents [0014], and aryl substituents of 6-10 carbons are preferred, but are not limited [0020].



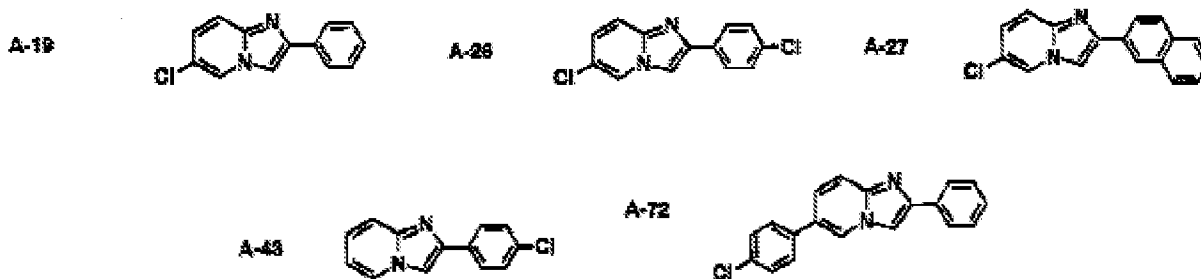
Nakatsuka et al. give several examples, including naphthyl substituents (shown below, compound A-50, [0032]), though the reference does not illustrate specifically a naphthyl substituent at X₄, but do give examples of aryl substitution at position X₄, as shown below (compound A-71, [0037]).



Nakatsuka et al. give further examples of compounds with more than one aryl ring, such as the compounds shown below. (Compound A-32, [0029])



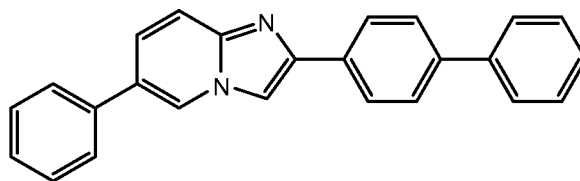
the reference describes compounds which could easily be substituted with additional aryl groups by simple Suzuki type coupling reactions, such as the compounds shown below (A-19, [0026]; A-26 and A-27, [0028]; A-43, [0031]; and A-72, [0037]). While Suzuki coupling is not explicitly taught by the reference it is a standard synthesis technique which would be well known to one of ordinary skill. These compounds can easily be further functionalized at either end of the molecule.



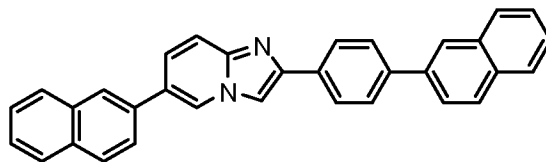
Given the level of detail in the disclosure of Nakatsuka et al., it would have been obvious to one of ordinary skill in the art at the time of the invention to make imidazopyrimidine compounds such as the ones shown below (among others). One of ordinary skill in the art would reasonably expect such compounds to have similar properties and be suitable for the same purpose given that Nakatsuka et al. teach aryl

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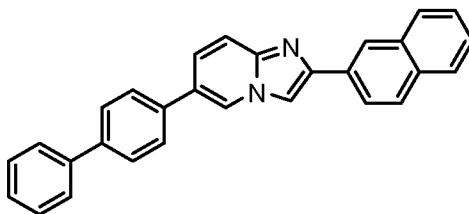
groups as substituents. The reference specifically teaches phenyl, naphthyl and biphenyl groups to be suitable, one of ordinary skill would reasonably expect combining these groups would produce similarly suitable compounds. For example “combining” compounds A-71 and A032 would result in the compound shown below.



This compound would meet the present claims as L² is phenylene and Ar² is phenyl while L¹ is a single bond and Ar¹ is phenyl. Other examples which would be readily obvious given the disclosure of Nakatsuka et al. are shown below.



This compound meets the present claims wherein Ar¹ is naphthyl (10 carbons), and Ar² is naphthyl (10 carbons), and L¹ is a single bond, and L² is phenylene.



This compound (shown immediately above) meets the limitations wherein Ar¹ is phenyl (6 carbon aromatic), Ar² is naphthyl (10 carbon aromatic), L¹ is phenylene, and L² is a single bond. Each of these compounds could be easily prepared by one of ordinary skill

in the art from compounds explicitly disclosed by Nakatsuka et al. such as A-19, A-25, or A- 27.

Response to Arguments

11. Applicant's arguments filed 17 July 2009 have been fully considered but they are not persuasive.

Regarding Nakatsuka et al. (JP 2001/035664 A) applicants argue that compound A-50 is not a position isomer of applicants' claimed compounds, and that there is no teaching or suggestion in Nakatsuka to further functionalize the compounds of Nakatsuka or to use the Suzuki coupling reaction. While the examiner agrees that compound A-50 of Nakatsuka et al. is not a positional isomer of the compounds as currently claimed it is a positional isomer of 6-(2-naphthyl)imidazo[1,2-a]pyridine which demonstrated the obviousness of placing a naphthyl group in the 6-position. The compounds and disclosure of Nakatsuka et al. is considered as a whole render several of the claimed compounds obvious to one of ordinary skill in the art as explained above. While the reference does not discuss using Suzuki coupling, this reaction is well known in the art and within the skill of an ordinary artisan. One of ordinary skill in the art presented with the halide bearing compounds above (such as compounds A-19, A-26, A-27, A-43, and A-72; [0026], [0028], [0031], and [0037]), and compounds such as A-32 and A-81 ([0029] and [0039]) having two linked aryl groups (biphenyl), which demonstrates further functionalization beyond a single aryl group, would readily

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envision aryl substituted imidazo[1,2-a]pyridine compounds which overlap with the presently claimed compound (as explained above).

Applicants cite examples 18-21 and comparative example 3 as demonstrating unexpected results. However, the evidence is not commensurate with the scope of the present claims. It is well settled that evidence presented to rebut a prima facie case of obviousness must be commensurate in scope with the claims to which it pertains and that such evidence which is considerably narrower in scope than the claimed subject matter is not sufficient to rebut a prima facie case of obviousness. *In re Dill*, 604 F.2d 1356, 1361, 202 USPQ805, 808 (CCPA 1979). Also see *In re Boesch*, 617 F.2d at 276, 205 USPQ at 219; *In re Lindner*, 457 F.2d 506, 508, 173 USPQ 356, 358 (CCPA 1972) and *In re Susi*, 440 F.2d 442, 169 USPQ 423 (CCPA 1971). As the rejected claims are significantly broader in terms of suitable Ar¹, Ar², L¹ and L² than examples 18-21 and comparative example 3 of the specification, which applicant cites as evidence of unexpected results and which are limited to a comparison of compounds where Ar¹ is phenyl or naphthyl, Ar² is 9-naphthyl-anthracene, L¹ is a single bond, and L² is phenylene, the evidentiary showing is far from being commensurate in scope with the degree of patent protection sought. *In re Kulling*, 897 F.2d 1147, 1149, 14 USPQ2d 1056, 1058 (fed. Cir. 1990) ("[O]bjective evidence of nonobviousness must be commensurate in scope with the claims." (quoting *In re Lindner*, 457 F.2d 506, 508, 173 USPQ 356, 358 (CCPA 1972); *In re Dill*, 604 F.2d 1356, 1361, 202 USPQ 805, 808 (CCPA 1979) ("The evidence presented to rebut a prima facie case of obviousness must be commensurate in scope with the claims to which it pertains.")).

Allowable Subject Matter

12. Claim 7 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 1. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

13. Claims 1-3, 6, and 14-21 are allowed.

14. The following is a statement of reasons for the indication of allowable subject matter:

The closest prior art, Kim et al. (US 6,998,487 B2) Hosokawa et al. (2002/0048687 A1), do not teach or suggest the heterocyclic compounds or organic electroluminescent device as presently claimed. Kim et al. (US 6,998,487 B2), teaches compounds wherein Ar² is an aryl group with 6-60 carbons however the reference does not teach or suggest the specific groups for Ar² as claimed. Hosokawa et al. (2002/0048687 A1) teach heterocyclic compounds but does not teach or suggest compounds with the specific combinations of L, Ar¹, and Ar² of the present claims.

Conclusion

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL WILSON whose telephone number is (571)

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270-3882. The examiner can normally be reached on Monday-Thursday, 7:30-5:00PM EST, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Tarazano can be reached on (571) 272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

16. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. Lawrence Tarazano/
Supervisory Patent Examiner, Art Unit 1794

MHW